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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,501	12/19/2001	Donald Everett Curtiss	50103-418	8505

7590

02/26/2003

MCDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

LAMB, BRENDA A

ART UNIT

PAPER NUMBER

1734

DATE MAILED: 02/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

Applicant(s)

Examiner

Group Art Unit

10/02/501

Curtiss et al

LAMB

1734

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 4/2/02
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-24 is/are pending in the application.
- Of the above claim(s) 13-23 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-11 and 24 is/are rejected.
- ☒ Claim(s) 12 is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-12 and 24, drawn to apparatus, classified in class 118, subclass 423.
- II. Claims 13-23, drawn to method, classified in class 427, subclass 8.

The inventions are distinct, each from the other because:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice an other and materially different process such as one for cleaning the substrate or one for applying a paint or adhesive onto the substrate.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation between Examiner Bareford and Attorney Weisstuch on 12/03/02 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12 and 24. Affirmation of this election must be made by

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applicant in replying to this Office action. Claims 13-23 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith 3,207,127 in view of Yamashita et al.

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Smith teaches the design of an apparatus for dip coating a wafer substrate with different layers to form a semiconductor. Smith teaches in forming the semiconductor applying a resist layer on the wafer substrate. Smith teaches layers on the substrate are formed by a dip coating using the following apparatus: a plurality of coating vessels each having an open top; a substrate mounting means for introducing into and withdrawing the substrate from the interior space of the vessel via the open top. Smith fails to teach a viscosity control system for monitoring and maintaining viscosity of the treatment liquid in the vessels at a predetermined value. However, Yamashita et al teaches a viscosity control system for monitoring and maintaining the viscosity of the liquid supplied to the coating vessel at a predetermined value. Therefore, it would have been obvious to modify the Smith apparatus by providing a viscosity control system such as taught by Yamashita et al in communication with one of the coating vessel applying resist for the taught advantage of cost savings of recycling resist. These claim 1 and 24 are obvious over the above cited references. With respect to claims 2-11, Yamashita et al teaches the viscosity control system includes a recirculation loop for recirculating the treatment liquid/photoresist in the coating vessel. Yamashita teaches the recirculation loop includes a reservoir 3 with agitator 4, inlet conduit and outlet conduit. Yamashita et al teaches the recirculation loop includes a pump 10 and a filter 11 for removing particulate matter which is connected to the inlet conduit. Yamashita et al recirculation loop includes a viscosity measuring device 12 measuring the viscosity of the liquid in the reservoir and solvent dispensing system for supplying solvent to the reservoir in response to measured viscosity. Yamashita et al teaches the solvent

dispensing system includes a tank 5 containing the solvent and a conduit with a valve assembly having control means between the solvent tank and reservoir wherein the valve assembly responds to measured viscosity by controlling flow of solvent in conduit thereby maintaining viscosity in the reservoir and coating vessel. Yamashita et al teaches a means for diverting flow and interrupting flow from reservoir to the coating vessel by temporarily storing the resist and obvious to provide three-way valves to control to the multiple temporary storage tanks 7' for obvious advantage of greater control of the process.

Claims 1-11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kameyama in view of Yamashita et al.

Kameyama teaches in the manufacture of semiconductor, applying several different materials onto the surface of the silicon wafer including a photoresist and teaches design of an apparatus for dip coating a substrate which is comprised of a dip coating vessel or cup which has an interior surface for containing a liquid as shown in Figures 1 and 9 and a substrate mounting means for introducing into and withdrawing the substrate from the interior space of the vessel via the open top. Kameyama et al teaches in Fig. 9 that apparatus may include a recirculation loop for circulating the processing liquid to the dip coating crop in order to purify the processing liquid. Kameyama et al fails to teach viscosity control system for monitoring and maintaining viscosity of the treatment liquid in the coating vessel/cup at a predetermined value. However, Yamashita et al teaches a viscosity control system for monitoring and maintaining the viscosity of the liquid supplied to the coating vessel to a predetermined

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value. Therefore, it would have been obvious to modify the Kameyama apparatus by providing a viscosity control system such as taught by Yamashita et al in communication with the coating vessel applying a treatment liquid/resist for the taught advantage of cost savings of recycling resist. These claims 1 and 24 are obvious over the above cited references. With respect to claims 2-11, Yamashita et al teaches the viscosity control system includes a recirculation loop for periodically recirculating the treatment liquid/photoresist in the coating vessel. Yamashita et al teaches the recirculation loop including a reservoir 3 with agitator 4, inlet conduit and outlet conduit. Yamashita et al teaches the recirculation loop includes a pump 10 and filter 11 for removing particulate matter which is connected to the inlet conduit. Yamashita et al recirculation loop includes a viscosity measuring device 12 measuring the viscosity of the liquid in the reservoir and solvent dispensing system for supplying to reservoir in response to measured viscosity. Yamashita et al teaches the solvent dispensing system includes a tank 5 containing the solvent and a conduit with a valve assembly having control means between the solvent tank and reservoir wherein the valve assembly responds to measured viscosity by controlling flow of solvent in conduit thereby maintaining viscosity in the reservoir and coating vessel. Yamashita et al teaches a means for diverting flow and interrupting flow from reservoir to the coating vessel by temporarily storing the resist and obvious to provide three-way valves to control to the multiple temporary storage tanks 7' for obvious advantage of greater control of the process.

Claims 1-11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hillman et al in view of Yamashita et al.

Hillman et al teaches in the manufacture of semiconductor applying several different materials onto the surface of the silicon wafer including a photoresist and teaches design of an apparatus for coating a substrate which is comprised of a coating vessel which has an interior surface for containing a liquid as shown in Figures 3-7 and a substrate mounting means for introducing into and withdrawing the substrate from the interior space of the vessel via the open top. The Hillman et al apparatus is capable of the end use of dip coating of a substrate. Hillman fails to teach the apparatus is comprised of a viscosity control system. However, Yamashita et al teaches a viscosity control system for monitoring and maintaining the viscosity of the liquid supplied to the coating vessel at a predetermined value. Therefore, it would have been obvious to modify the Hillman et al apparatus by providing a viscosity control system such as taught by Yamashita et al in communication with one of the coating vessel applying a resist for the taught advantage of cost savings of recycling resist. Thus claims 1 and 24 are obvious over the above cited references. With respect to claims 2-11, Yamashita et al teaches the viscosity control system includes a recirculation loop for periodically recirculating the treatment liquid/photoresist in the coating vessel. Yamashita et al teaches the recirculation loop including a reservoir 3 with agitator 4, inlet conduit and outlet conduit. Yamashita et al teaches the recirculation loop includes a pump 10 and filter 11 for removing particulate matter which is connected to the inlet conduit. Yamashita et al recirculation loop includes a viscosity measuring device 12 measuring

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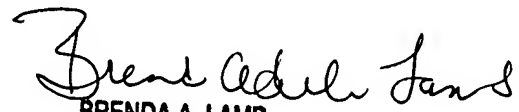
the viscosity of the liquid in the reservoir and solvent dispensing system for supplying to reservoir in response to measured viscosity. Yamashita et al teaches the solvent dispensing system includes a tank 5 containing the solvent and a conduit with a valve assembly having control means between the solvent tank and reservoir wherein the valve assembly responds to measured viscosity by controlling flow of solvent in conduit thereby maintaining viscosity in the reservoir and coating vessel. Yamashita et al teaches a means for diverting flow and interrupting flow from reservoir to the coating vessel by temporarily storing the resist and obvious to provide three-way valves to control to the multiple temporary storage tanks 7' for obvious advantage of greater control of the process.

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication should be directed to Brenda A. Lamb at telephone number (703) 308-2056. The examiner can normally be reached on Monday and Wednesday through Friday with alternate Tuesdays off.

B.A. Lamb/dh

February 25, 2003


BRENDA A. LAMB
PRIMARY EXAMINER
~~GROUP 1800~~